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## Impact of having leg amputation on sexual health: a systematic review

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### Abstract

Amputation is a life-changing event that leads to depression along with the challenges it brings. It affects the lives of individuals in terms of various limitations in professional performances; social, entertaining and sexual activities. But, in all societies, the sexuality of individuals with disabilities is being ignored and almost never mentioned in this field. The aim of this study is to examine the sexual health problems and the difficulties in sexual life of the individuals who comes to the disabled state after the amputation. For the study, 13 data bases were scanned in totally. Scanning was done in English and Turkish languages by use of MeSH terms; "leg/limb amputation" (or amputation) and "sexual life" (or sexual health, sexuality, sexual behaviour, sexual disfunction). The publications reached as a result of the scanned databases were evaluated according to the inclusion criteria. As a result of the screening, five studies were included in the study. As a result of the studies, it has been found that the individuals who have amputation experience sexual problems and the amputation affects the sexual health. In rehabilitation practice that are consulted after amputation, it is mentioned that sexuality is not a primary issue, but it is highly significant and it should be emphasized more. It, also, not considered enough by health professionals who provide rehabilitation services, and they stated that this issue should be discussed with great importance by health professionals. The fact that studies on limb amputation are very few and there is no existence of any work done in Turkey on this subject shows the necessity of giving more importance to the subject. Studies have shown that health professionals do not provide for counseling on sexuality, they do not have sufficient knowledge and skills in this area, and the patients' needs are not supplied enough.

Keywords: Amputation, sexuality, sexual Health.

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## 1. Introduction

Amputation is expressed as an important physical and psychological condition increasing in frequency and prevalence all over the world. It is stated that nowadays it has become a situation that we more often encounter (Amputee Coalition of America, 2013, p.1). Amputation is defined as the removal of an injured limb surgically by cutting it together with the bone so that it can not be cured (Sesli et al., 2011, p.15).

Limb loss affects a variety of people in the United States and around the world including of people of every race, ethnicity and background regardless of occupation, geographic location or economic status (NLLIC, 2007, p.1). According to the American Amputee Coalition (2013), in America, 2.1 million people are facing living with upper or lower limb loss. Every day 507 people lose their arms or legs and 185,000 new amputation cases are reported per year. It is estimated that this number will reach 3.6 million people by 2050 (Amputee Coalition of America, 2013, p.1). Mortality following a lower limb amputation is quite high among those whose amputations are of a dysvascular or diabetic etiology. In addition, Thirty-day mortality rates range from 6.3 to 42.3 percent (Kurichi et al., 2010, p.1-13).

The individual response to the amputation is varied and quite complex. It is influenced by personal, social, physical and environmental factors (Ziegler-Graham et al., 2008, p.422-3). Amputation is caused by various limitations in professional performance; it affects the lives of individuals, including social, civilized and sexual activities (Geertzen et al., 2009, p.522; Washington & Williams, 2014, p.44-45). Generally, this problem is not taken into consideration in the cultural context, and it is not thought that after amputation, individuals will have problems about their sexual life (Verschuren et al., 2015, p.187). However, amputee individuals face a lot of problems, especially about sexuality (Verschuren et al., 2015, p.187; Manucharian, 2013, p.177; Nguyen et al., 2016, p.3-4).

When examined the amputation individual effects, it is seen that it breaks body consciousness, causes physical disability, various psycho-social and behavioral problems After amputation, the individual feels himself inadequate and the problem of getting close to the opposite sex/wife is living with fear of rejection (Geertzen et al., 2009, p.522). Despite these effects of amputation, there are limited studies about sexuality of disabled people in the field of health research and in clinical practice (Verschuren et al., 2015, p.187; Cangöl et al., 2013, p.141-142). When it can be prevented most of the long-term disability after amputation, it seems that amputation is not considered enough to provide early psychological treatment and rehabilitation for individuals (Srivastava & Chaudhury, 2014, p.1-6).

Sexuality is considered to be an important factor as complementing the lives of individuals, affecting the health of all age groups and quality of life. Because it is the basis of life and it involves such areas as gender, sexual identity, orientation, love, reproduction (Yaralı & Hacıaloğlu, 2016, p.108-127).

According to the World Health Organization (WHO), sexuality is the combination of the personality, communication, and enriching effects of physical, emotional, intellectual and social aspects. Also as a sexual being, it is the health of the person that enhances both the physical integrity and the emotional, intellectual and social integrity of person, the development of personality, communication and emotional sharing (Bozdemir & Özcan, 2011, p.37-46).

Although the difference in definition and perception, sexuality has not lost its significance for ages (Bozdemir & Özcan, 2011, p.37-46). Despite the fact that it is among the topics that are often on the agenda in modern societies, when it comes to disability it never comes to mind (Verschuren, 2016). In general, sexuality of disabled people are approached with prejudice and their sexual lives are ignored. However, sexuality is a fundamental right and necessity for all people (Cangöl et al., 2013, p.142; Verschuren et al., 2010, p.153-154). According to Maslow's theory, the most important of all needs are physiological needs. Physiological needs include nutrition, sleep, sexuality, ejaculation, painful avoidance and activity (Ercoşkun & Nalçacı, 2005, p.353-70). Physiological needs are at the base of

Maslow's motivation pyramid, and the individual is not influenced by the higher instincts until the needs of the foundation are met (Gürcan, 2013, p.1-2).

Disturbance of sexual health can lead to break down of psychological health, family health and social health in circle together with physical health (Bozdemir & Özcan, 2011, p.37-46). Sexual problems can lead to disagreements among spouses, deterioration of the quality of sexual life, divorce and dissolution of families and social problems (Yaralı & Hacıaloğlu, 2016, p.108-27). The fact that sexuality is a necessity for all requires that health personnel also contribute to the discussion of the sexual functions, safe sex of disabled individuals and to the development of the individual's sexual identity (Timur et al., 2006, p.51-8). However, health professionals have difficulties in assessing and diagnosing sexual functioning due to prejudices, lack of knowledge, false expectations and beliefs, sexual linguistic alienation, and the attitudes and beliefs developed by the patient in relation to the cultures (Yıldız, 2010).

It is stated that nurses can assume the role of ensuring the safety, counseling and rehabilitation of the patients. In the organizations included by the American Nurses Association, sexuality is defined as an integral part of nursing care. The North American Nursing Diagnostic Association included sexual dysfunctions in nursing diagnoses in 1980 (Kömürcü et al., 2014, p.9-17). The involvement of living sexual disorders and sexual dysfunction in nursing diagnoses reveals the importance of related researches in the nursing field (Santis & Vasquez, 2010, p.174-84).

Nurses should be aware of the sexual needs of disabled people by protecting them from discrimination and negligence, by evaluating the holistic view of nurses, holistic health, collective leadership and health educator roles. They need to have sufficient knowledge about this issue, to provide the necessary support, and to work on the sexual problems of disabled people (Cangöl et al., 2013, p.141-46). This area where nurses play a key role; because of the reached information and studies are very small, and no work has been done in Turkey, it is necessary to make this systematic review.

## **2. Method**

This study was prepared in accordance with the PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) notation used to guide authors to improve the presentation of systematic compilation and meta analysis studies (PRISMA 2015).

### **2.1. Search Strategy**

The articles to be included in the study were scanned using 13 databases: PubMed, Cochrane Library, Medline, Science Direct, Clinical Trials.gov, Elsevier Clinical Key, ULAKBİM, Türkiye Klinikleri, Taylor & Francis Online, Europe PMC, Web of Science, CINAHL and Google Akademik. The databases were scanned without year limitation between 01 November 2016 and 12 February 2017. The databases were scanned in English and Turkish languages with using "leg/limb amputation" (or amputation) and "sexual life" (or sexual health, sexuality, sexual behaviour, sexual disfunction) MeSH terms. Repeated work (duplications) has been identified using the EndNote X7 program. A summary of the research titles was examined by a researcher and five studies were included in the systematic review as given in Figure 1.

### **2.2. Inclusion Criteria**

The inclusion criteria were defined according to PICOS (P: population, I: interventions, C: comparisons, O: outcomes, S: study design) (Center for Reviews and Dissemination 2009).

### **2.3. Participants**

The individuals who have undergone leg amputation and are over 18 years of age. There are no restrictions on gender, socioeconomic status, ethnicity.

## 2.4. Interventions

Individuals who had undergone leg amputation did not receive any intervention during the study, and information was collected using an individual interview or questionnaire.

There were no interventions with participants involved in the research, and information was collected by using an individual interview or questionnaire.

## 2.5. Comparison groups

There are no test and control groups. As a result of comparisons made by the amputees according to their sexual experiences in previous lives; it has been determined that having a leg amputation affects sexual lives and sexual functions.

## 2.6. Study design

### 2.6.1. Types of work

In order to reach to high level evidence studies, studies were scanned in English and Turkish languages, but all studies were selected that regardless of the level of evidence (qualitative, cross-sectional and descriptive) because of the inadequacy of studies. The systematic review was included full-text and English-Turkish studies, also gray literature was not included the study.

### 2.6.2. Non-inclusion criteria

Systematic reviews and met analysis studies are not included in the systematic review. The sample consists of individuals under the age of 18 years was drawn from study.

In the first stage, databases, headings, abstracts, key words were scanned with MeSH terms. The articles from the different databases were exported to the EndNote X7 program and repetitive tasks were deleted. The first investigator reviewed the titles and abstracts of the articles to reach possible studies in the remaining studies. The second researcher also read and evaluated the titles and abstracts of the articles reached. The full texts of 13 studies were examined in detail by two researchers. For a quality assessment, studies were recorded and selected by two independent researchers in a data summarization format based on the inclusion criteria. At this stages, the snowball technique was used.

This process is given in **Figure 1** by the PRISMA flow chart together with numerical data.

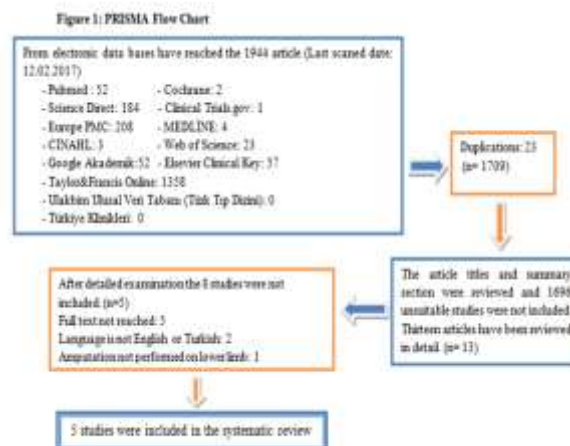


Figure 1. PRISMA Flow Chart

**3. Results**

Five studies were included in the compilation accordance with the purpose of the study and according to the inclusion criteria as given in Figure 1.

In this review, the results of 455 participants and 5 articles are listed in Table 1. The sample size varies from 7 to 301 individuals. When the publication year of the works is examined, it is seen that the oldest work according to the criteria was published in 2000 and the latest work was published in 2016. Two studies were conducted in the Netherlands and other studies were conducted in the United States, Japan and the United Kingdom. The findings obtained from the studies are listed under four headings below:

**3.1. Living Sexual Problems**

The vast majority of participants stated that they had had negative sexual experiences after the amputation and had a better and happier sexual life before amputation. It was determined that they met at least one sexual problem. These problems can be grouped under the headings of sexual desire, arousal, sexual satisfaction, lack of fantasy and excitement, feeling of sexual inadequacy, fear of dislike by partner, dissatisfaction of partner.

**3.2. Gender and Age Factor**

Although there are no definite statements for gender and age in the scope of the study, it has been determined that sexuality is more important for young and male participants and that they are more concerned with the problems experienced. Some of the older participants indicated that sexuality is not important and that other diseases are a priority.

**3.3. Partner and Environment Support**

Participants emphasized that when they communicate well with their partners they can solve their problems and that spouse support is important. The vast majority of participants stated that they could not speak with their spouses and did not know how to express their problems. Moreover, it was determined that they could not share their sexual problems because of their visibility and embarrassment.

**3.4. Rehabilitation and Health Services**

All of participants reported that sexuality was not addressed in post-amputation rehabilitation services and that health workers were not trained. They emphasized the need for rehabilitation and post-amputation sexual problems. They want from health professionals to provide training and counseling in this regard. In particular, they need support especially for issues such as spousal adjustment, problems to be experienced and correct communication. However, they did not provide such a service.

Participants using prosthesis as health services stated that prosthetic use affects their lives positively, they feel themselves better and they continue their lives like normal people. It has been stated that the use of prostheses is also very effective on the body image. In this regard, the support and direction of health professionals is important for them.

**Table 1. Characteristics of Investigated Articles by Year, Place, Sample, Method and Findings**

Research  (Study, year, place)	Sample	Method	Conclusions
<b>Verschuren et al, 2016</b>  <b>Netherlands</b>	<b>301</b> individuals with leg amputations over 18 years of age	<b>Cross- sectional study;</b>  Data was collected by online question form	<b>They stated that 76% of participants had problems in their sexual life after amputation.</b>  ❖ 75% of the participants stated that they had problems with their sexual life after the amputation, ❖ 56% of at least one sexual problem, ❖ 20% of one or more sexual dysfunctions. <b>The sexual problems' experienced:</b>  ❖ 31% Sexual desire ❖ 25% Arousal ❖ 21% Sexual satisfaction  ❖ They stated that they need rehabilitation support in this regard.
<b>Verschuren et al, 2015</b>  <b>Netherlands</b>	<b>26 individuals</b> with leg amputation at the age of 22-71	<b>Qualitative study;</b>  Data was collected with a semi- structured questionnaire	<b>The majority of the participants were after the amputation;</b>  ❖ They have experienced significant changes in their sexual lives, ❖ They are confronted with problems such as sexual desire, satisfaction, feeling insufficient, ❖ They pointed out that they needed rehabilitation support in this regard.
<b>Batty et al, 2014</b>  <b>England</b>	<b>7 individuals</b> with leg amputation between 21 and 51 years of age	<b>Qualitative study;</b>  Data was collected with a semi- structured questionnaire	<b>Participants stated that their sexual life after amputation was affected and that they experienced some changes.</b>  ❖ They lose their body integrity, ❖ They are confronted with problems such as sexual desire, satisfaction, feeling insufficient ❖ The problem of getting close to their partners and the fear of not liking, ❖ Single and young people are affected more negatively, ❖ They stated that the use of prosthesis and some activities are very easy to do and they feel more comfortable.
<b>Ide et al, 2002</b>  <b>Japan</b>	<b>85 individuals</b> with leg amputation between 20- 60 years of age	<b>Descriptive Study;</b>  Data was collected by online question form	<b>They stated that after amputation there was a change in their sexual lives and sexual satisfaction decreased.</b>  ❖ 42.3% were significant changes in their sexual lives, ❖ 43.5% reported that they talked with their friends or partners in their daily life, ❖ 50.6% of them do not talk about their sexuality at all in their daily life, ❖ That they are intimate and do not talk because of their embarrassment. ❖ 60% of the participants stated that they were sexually active in some way.
<b>Bodenheimer et al, 2000</b>  <b>America</b>	<b>30 individuals</b> with leg amputation between the ages of 32-79	<b>Descriptive Study;</b>  Data was collected by individual question form / questionnaire	<b>The vast majority of participants stated that they had problems with their sexual functions.</b>  ❖ 77% were not satisfied with their sexual life, ❖ Sexual arousal, ❖ Sexual fantasies and excitement, ❖ They stated that they had problems in sexual satisfaction issues.



#### **4. Discussion**

Sexuality; it is considered as an important factor affecting the all of age groups health, the quality of life and complementing the lives of the individuals (Yaralı & Hacılioğlu, 2016, p.108-27). In all the studies examined in this systematic review, it was determined that the amputee individuals experienced sexual problems. It was stated that the participants were not taken into consideration of sexual problems and they were not considered adequately by health professionals in rehabilitation services and that this issue should be discussed.

The findings of the study were discussed under four headings in the context of literary information.

##### **4.1. Living Sexual Issues**

The researches included in the study indicated that they had problems with sexual desire, sexual satisfaction and arousal did not consider themselves adequately about sexuality. It is stated that they are not as active and comfortable sexual lives as they used to be, and their sexual identities have deteriorated. Senra et al. (2011) stated that after the amputation, the individuals abstained from turning themselves around and left their sexual lives with their spouses. According to the research, after amputation participants' sexual functions and close relationships were affected (p.180-91). Wiegerink et al. (2008) stated that participants had limited sexual satisfaction due to amputation and did not find themselves sexually attractive and adequate (p.112-8). When the sexual problems experienced and the effect of sexuality on people's lives are taken into consideration; it is seen that the sexual lives of amputee individuals should be given importance. Patients after amputation need to be counseled and supported in terms of body sensation.

##### **4.2. Gender and Age Factor**

It has been seen that in the study, gender and age effects were not fully reflected, and that male and young participants had more negative experiences. Moin et al. (2009) stated that the sexual satisfaction, sexual identity, body image and life satisfaction of the handicapped women are lower when compared to non-handicapped women. At the study has been made a comparison between the same gender (p.83-95). In the study conducted by Basson (2010), it is stated that sexual dysfunctions and sexual problems are common in people with disability / chronic illness (p.374-88). It is stated that the impairment of sexual health does not only affect physical health, it can also lead to impaired mental health, family health and social well-being in both men and women (Bozdemir & Özcan, 2011, p.37-46). Considering the information, it turns out that the sexual experience of each group member is influenced and the service to be presented should be comprehensive considering this situation.

##### **4.3. Partner and Environment Support**

After amputation, it is necessary to provide rehabilitation and counseling of partners together for sexuality. Amputee individuals may not have enough knowledge and skills to talk with partners in this regard. The provision of spousal support is also seen as important. Among the studies we have examined in the study Verschuren et al. (2015); it is emphasized that sexual problems can be solved with help of peer support and good communication (p.190). Verschuren et al. (2016) also stated that the vast majority of participants needed information on speaking their new post-amputation situations with their spouses, and needed support in speaking of sexuality. As support of these studies, Verschuren et al. (2013) stated that partner support had a great effect on post-amputation. When there is a problem in sexual life between spouses; It is stated that spouses will be able to solve this problem with good communication and talk together (p.1698-9). When these findings are taken into consideration, it can be considered that health professional have a key role in ensuring harmony between spouses and providing effective communication and counseling.

##### **4.4. Rehabilitation and Health Services**

Verschuren (2013) stated that sexuality is not discussed well by professionals in the amputation units (p.1698-9). Health professionals stated that they did not talk about sexuality in their interviews with patients and that they did not talk to this area. In the study Hordern (2007); it has been determined that health professionals working in rehabilitation centers do not see themselves adequately capable of talking about sexuality and that they do not have enough knowledge and skills to initiate and sustain a session in this respect (p.224-7). In another study by Verschuren (2013), it was noted that only 22% of health professionals received questions about sexuality and did not address this issue at all. Although individuals with leg amputation have a lot of problems related to sex, this issue are not discussed in the amputation units (p.1698-9). Özkorumak (2009) reported that both physically disabled patients and physicians were anxious about bringing up sexual issues and making them a current issue. It is emphasized that physicians in this area are inadequate (p.37-8).

Among the studies included in the study, Batty et al. (2014) research has been included some information about use of prosthesis after amputation. One participant who used a prosthesis stated that his life changed after he started using prosthesis and he felt better now. He continued his life like a normal person and stated that the use of prosthesis on the body image is very effective (p.686-9). As support of this study, Senra et al. (2011), one of the participants stated that "after starting prosthesis, he is a completely different person, that he can not do anything without prosthesis (talking with friends, riding, walking, driving, etc.)". Another participant stated that "he did not do anything independently before using prosthesis, it reduced his dependence" (p.180-91). Considering the findings of the studies, it is understood that providing rehabilitation, health care and prosthesis use is important and makes life easier for the amputee individuals.

## **5. Conclusions and Recommendations**

As a result of the amputation, there is a decrease in the professional functions of the individuals, leisure time, social and sexual activities. Individuals who having a missing pieces, are very influenced in their lives as a result of this matter and trying various ways to come from. It has been determined that this issue is not addressed adequately despite the adverse conditions that develop after the amputation. Within studies the health professionals were not able to provide counseling on sexuality, they did not have sufficient knowledge and skills in this area, and they could not supply with the needs of the patients.

The fact that there are very few studies on sexuality in individuals with leg amputation and the absence of any studies on this subject in Turkey reveals the necessity of giving more importance to this subject. It is essential that nurses who are working on the field as public health nurses, must fulfill their advisory roles; caregiver, guardian-watcher-advocate, executive, rehabilitative, comforting, decision-maker, educator and consultant in order to disabled people to adjust to their life. It is thought that the work done in this area is very inadequate and should be improved.

Training and courses should be organized in this area in order to increase their confidence in health professionals and to have knowledge about sexuality (especially for those with amputation/disability individuals). This field speciality of health workers should be increased.

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